Revision Indices

What do you notice about all of the numbers:

$$2, 8, 4, 16$$

1 Solve $4^x = 2^{10}$ **2** Solve $2^x = \frac{8^3}{\sqrt{2}}$ **3** If $2\sqrt{2} = 2^k$, determine k.

1 If $9\sqrt{3} = 3^k$, find k.

2 Solve $3^x = 9^{2x-1}$

Write $81 \times \frac{3^0}{27^2}$ as a power of 3.

Write $\frac{1}{125} \times 25^9$ as a power of 5.

Write $\frac{\sqrt[3]{81}}{3}$ in the form 3^k, where k is a constant to be found.

Solve for the unknown value (1)

$8^2 = 2^{2m-4}$

$16^5 = 2^{2m+4}$

$27^4 = 3^{5m-3}$

$81^5 = 3^{3m+2}$

$25^6 = 5^{7m-9}$

$125^7 = 5^{9m+3}$

Solve for the unknown value (1)

$128 = 4^{2x} \times 2^{x}$	$\frac{8}{2^{7}} = 2^{n}$	$4^{5} \times 2^{-4} = 2^{k}$
$\frac{1}{\sqrt[3]{9^{4}}} = 3^{n}$	$16^{\frac{1}{5}} \times 2^{x} = 8^{\frac{3}{4}}$	$5 \times 4^{\frac{2}{3}} + 3 \times 16^{\frac{1}{3}} = 2^{p}$
$5^{n} \times 5^{n+4} = 25$	$2^{a^{2}} = 8^{a} \times 16$	$9^{0.5p} \times 81 = 27^{2p-1}$

Exam problem

21 Given that $M = \dfrac{18^{4n} \times 2^{3(n^2-6n)} \times 3^{2(1-4n)}}{12^2}$

find the values of n for which $M = 2$

1. Solve the following simultaneous equations without using a calculator.

$$4x - 3y = 11$$

$$9^{y+3} = \frac{3\sqrt{3}}{27^{x}}$$

$\left(\frac{1}{2}, -3\right)$

2. Determine the value of k

$$\frac{2^{288}+2^{285}}{9}=2^{k}$$

3. Solve the following

$$6^{x+2}\times 2^{1-x}=\frac{8}{3}$$

4. Solve for x

$$\frac{1}{x} \times \sqrt{\frac{x^2\sqrt{x^5}}{(\frac{1}{\sqrt{x}})^3}} + \frac{2}{\sqrt{x}} \times \left[2\sqrt{x^3} - (\frac{1}{\sqrt{x}})^{-3}\right] + x(x^3\sqrt{x})^{-\frac{2}{7}} = 4$$